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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RASHID, DAVID	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,879	SHIMAMURA ET AL.	
	Examiner	Art Unit	
	DAVID P. RASHID	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,15-23 and 30-31* is/are rejected.

7)☒ Claim(s) *9-14,24-29 and 32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/7/2005, 11/23/2007, 2/26/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

[1] All of the examiner's suggestions presented herein below have been assumed for examination purposes, unless otherwise noted.

Priority

[2] Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) (Application # JP293806/2003, filed January 7, 2005; JP314557/2003, filed January 7, 2005; JP314565/2003, filed January 7, 2005; and JP397004/2003, filed January 7, 2005), which papers have been placed of record in the file.

[3] MPEP §201.13 II G states "An applicant may incorporate by reference the foreign priority application by including, in the U.S. application-as-filed, an explicit statement that such specifically enumerated foreign priority application or applications are "hereby incorporated by reference." The statement must appear in the specification. See 37 CFR 1.57(b) and MPEP §608.01(p)." – it is suggested to incorporate by reference the foreign priority application by including an explicit statement in the specification.

Claim Objections

[4] Claims 1-32 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

[5] Claim 6 cites "that the individual parameters comprise a real component and imaginary component of an impedance of the object with which the apparatus is in contact through said detection element" (emphasis added); however, every quantization of a signal will always comprise

a real component and imaginary component as any number N = X + Yi (where X is the real component, and Y is the imaginary component), more specifically when Y = 0 is also included.

Drawings

[6] The drawings were received on January 7, 2005 and are acceptable.

Claim Rejections - 35 USC § 103

[7] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[8] **Claims 1-6, 15-22,** and **30** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,771,268 (*hereinafter* "Sone") in view of U.S. Patent No. 7,184,581 (*hereinafter* "Johansen").

Regarding **claim 1**, while Sone discloses a biometric recognition apparatus (fig. 1) characterized by comprising:

a detection element (fig. 1, item 3) which electrically contacts an object (finger in fig. 1);

a supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) which generates a supply signal (3:7-57);

a response signal generating unit (fig. 1, item 8) which includes a resistive element (fig. 1, item 5) connected between said supply signal generating unit (fig. 1, items V_{SS},V_{DD}) and said detection element (fig. 1, item 3), applies the supply signal to said detection element through the

resistive element, extracts, from one terminal of the resistive element, a response signal (fig. 3, items (b), (c), (d)) containing not less than one individual parameter which changes depending on whether or not the object is a living body (items (b), (c), (d) are different than (a) in fig. 3), and outputs the signal;

a waveform information detection unit (fig. 7; fig. 8, item 21) which detects at least one of the individual parameters as waveform information from the response signal (fig. 3, items (c), (d)), and outputs a detection signal (fig. 1, item B; fig. 7, item 15) representing the waveform information (fig. 3); and

a biometric recognition unit (fig. 7) which determines on the basis of the detection signal whether or not the object is a living body ("the signal B is a decision signal which identifies whether the human body contacts the touch electrode 3 or not" at 3:33-46), Sone does not teach wherein the supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) generates an AC supply signal.

Johansen discloses a system for real time finger surface pattern measurements that teaches wherein a supply signal generating unit (fig. 3, item 34) generates an AC supply signal (3:60-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the supply signal generating unit of Sone to include generating an AC supply signal as taught by Johansen "to apply the measuring results…in such a way that the finger surface pattern can be determined more accurately.", Johansen, 2:3-6.

Regarding **claim 2**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 1, Sone is characterized in that the individual parameters comprise a phase and amplitude (it is inherent that all electrical signals contain a phase and amplitude component that may also be regarded as an "individual parameter") of the response signal (fig. 3, items (c), (d)) which change in accordance (items T1, T2 in fig. 3 occur due to the impedance of the

object having an effect) with an impedance (the object contains impedance) of the object (finger in fig. 1) with which the apparatus is in contact through said detection element (fig. 1, item 3).

Regarding **claim 3**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 2, Sone is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a phase difference (items T1, T2 in fig. 3) between the supply signal (fig. 3, item (a); fig. 1, item A) and the response signal (fig. 3, items (c), (d); fig. 1, item B) as the waveform information.

Regarding **claim 4**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 2, Sone is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a detection signal corresponding to an amplitude peak value (the square waves in fig. 3 are either 0 or the amplitude peak value, of which both are detected) of the response signal (fig. 3, items (c), (d); fig. 1, item B) as the waveform information.

Regarding **claim 5**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 2, Sone is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) separately detects waveform information representing a phase (refer to references/arguments cited in claim 3) of the response signal (fig. 3, items (c), (d); fig. 1, item B) and waveform information representing an amplitude of the response signal (refer to references/arguments cited in claim 4), and

said biometric recognition unit (fig. 7) determines on the basis of the respective detection signals representing the pieces of waveform information whether or not the object is a living body ("the signal B is a decision signal which identifies whether the human body contacts the touch electrode 3 or not" at 3:33-46).

Regarding **claim 6**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 1, Sone is characterized in that the individual parameters comprise a real component and imaginary component of an impedance of the object with which the apparatus is in contact through said detection element (refer to claim objection **[4]**).

Regarding **claim 15**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 1, Sone is characterized in that said biometric recognition unit (fig. 7) determines whether or not the object is a living body ("the signal B is a decision signal which identifies whether the human body contacts the touch electrode 3 or not" at 3:33-46), by comparing a recognition index value (fig. 3, item (a) having delay = 0) obtained from the waveform information of the detection signal (fig. 1, item B) with a reference range of a plurality of recognition index value reference values (those delays > 0 which could potentially be the presence of a living body) obtained under a plurality of measurement conditions.

Regarding **claim 16**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 15, Sone in view of Johansen is not characterized in that said biometric recognition unit performs the determination on the basis of a plurality of recognition index values obtained respectively for supply signals having different frequencies generated by said supply signal generating unit.

Johansen discloses a system for real time finger surface pattern measurements that teaches that a biometric recognition unit (fig. 1, items 9-12) performs the determination on the basis of a plurality of recognition index values (2:7-21) obtained respectively for supply signals (3:60-64) having different frequencies ("different frequencies" at 2:37-43) generated by a supply signal generating unit (fig. 3, item 34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the biometric recognition apparatus of Sone in view of Johansen to be characterized in that said biometric recognition unit performs the determination on the basis of a plurality of recognition index values obtained respectively for supply signals having different frequencies generated by said supply signal generating unit as taught by Johansen "to apply the measuring results…in such a way that the finger surface pattern can be determined more accurately.", Johansen, 2:3-6.

Regarding **claim 17**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 15, Sone is characterized in that said biometric recognition unit (fig. 7) performs the determination on the basis of a plurality of recognition index values (fig. 3, items (c), (d)) obtained respectively for different elapsed times (items T1, T2 in fig. 3) from the start of application of the supply signal.

Regarding **claim 18**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 15, Sone is characterized in that when comparing said each recognition index value (items T1, T2 in fig. 3) with the reference range (fig. 3, item (a) having delay = 0), said biometric recognition unit uses an individual reference range (fig. 7, item 18) corresponding to a measurement condition under which each recognition index value is obtained.

Regarding **claim 19**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 15, Sone is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a phase difference (items T1, T2 in fig. 3) between the response signal (fig. 3, items (c), (d)) and a reference signal (fig. 1, item (a)) synchronized with the supply signal (fig. 1, items A, V_{SS},V_{DD}) as the waveform information.

Regarding **claim 20**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 15, Sone is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects an amplitude (amplitude is detected) of the response signal (fig. 3, items (c), (d)) with respect to a reference signal (fig. 1, item (a)) synchronized with the supply signal (fig. 1, items A, V_{SS},V_{DD}) as the waveform information.

Regarding **claim 21**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 15, Sone is characterized in that said waveform information detection unit (fig. 7; fig. 8, item 21) detects a phase difference between the response signal and a reference signal synchronized with the supply signal (refer to references/arguments cited in claim 19) and an amplitude of the response signal as the waveform information (refer to references/arguments cited in claim 20).

Regarding **claim 22**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 1, and while Sone is characterized in that said supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) includes a frequency generating circuit (circuit responsible for creating fig. 3) which generates a rectangular wave signal having a predetermined frequency ("symbol A designates a rectangular signal of a predetermined period (e.g., 64 Hz)" at 3:33-37), and a waveform shaping circuit which extracts a desired frequency component from the rectangular wave signal (fig. 3) generated by said frequency generating circuit as the supply signal, and generates, as the supply signal, Sone does not teach wherein the supply signal generating unit (fig. 1, items A, V_{SS},V_{DD}) generates an AC supply signal having a predetermined frequency.

Johansen discloses a system for real time finger surface pattern measurements that teaches wherein a supply signal generating unit (fig. 3, item 34) generates an AC supply signal (3:60-64) having a predetermined frequency ("the system uses only a single frequency" at 1:33-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the supply signal generating unit of Sone to include generating an AC supply signal having a predetermined frequency as taught by Johansen "to apply the measuring results…in such a way that the finger surface pattern can be determined more accurately.", Johansen, 2:3-6.

Regarding **claim 30**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 22, and Sone is characterized by further comprising a frequency control unit (unit responsible for outputting items A, V_{SS},V_{DD}) which outputs a frequency control signal which designates a frequency of the supply signal (fig. 1, items A, V_{SS},V_{DD}), wherein said frequency generating circuit (circuit responsible for creating fig. 3) outputs a rectangular wave signal (fig. 3) having a frequency corresponding to the frequency control signal, and said waveform shaping circuit (fig. 8, item 25) extracts a frequency component corresponding to the frequency control signal from the rectangular wave signal and outputs the frequency component as the supply signal (arrow outputted from item 25 in fig. 8).

[9] **Claims 7-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sone in view of Johansen and U.S. Patent No. 5,311,550 (*hereinafter* "Fouche").

Regarding **claims 7-8**, while Sone in view of Johansen disclose a biometric recognition apparatus according to claim 6, Sone in view of Johansen does not characterized in that said waveform information detection unit detects (i) a phase difference between the supply signal and the response signal as waveform information representing the imaginary component and (ii) an amplitude peak value of the response signal as waveform information representing the real component.

Fouche discloses a transmitter, transmission method and receiver that teaches a waveform information unit (fig. 12, item 75) detects and stores (i) a phase difference as waveform information

representing the imaginary component and (ii) an amplitude peak value representing the real component (14:45-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the waveform information detection unit of Sone in view of Johansen to detect and store (i) a phase difference as waveform information representing the imaginary component and (ii) an amplitude peak value representing the real component as taught by Fouche AND the phase/amplitude difference to be the difference between the supply signal and the response signal "offers the original feature of reducing or eliminating the auto-distortion of the signal by using long transmission intervals for the information elements (often called symbols) to be transmitted [and t]o obtain a high throughput a plurality of information elements are simultaneously transmitted by using orthogonal channels.", Fouche, 1:57-63.

[10] **Claims 23** and **31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sone in view of Johansen and U.S. Patent No. 5,990,804 (*hereinafter* "Koyama").

Regarding **claim 23**, while Sone in view of Johansen disclose a biometric recognition apparatus according to 22 15, Sone in view of Johansen are not characterized in that said waveform shaping circuit includes a low-pass filter which extracts a desired low-frequency component from the rectangular wave signal.

Koyama discloses an animate body detector (fig. 1) that teaches a waveform shaping circuit includes a low-pass filter (fig. 5, item 30a) which extracts a desired low-frequency component (4:40-57) from the rectangular wave signal ("OUTPUT SQUARE PULSE" in fig. 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the waveform shaping circuit of Sone in view of Johansen to include a low-pass filter which extracts a desired low-frequency component from the rectangular wave signal as taught by

Koyama that "removes the radio-frequency components of the oscillation frequency", Koyama, 4:40-57.

Regarding **claim 31**, claim 23 recites identical features as in claim 31. Thus, references/arguments equivalent to those presented above for claim 23 are equally applicable to claim 31.

Allowable Subject Matter

[11] Claims 9-14, 24-29, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[12] The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 9-14, 24-29, and 32, while the prior art of record discloses those elements included in claims 1-8, 15-23, and 30-31, the prior art of record does not go into the specifics and teach (*e.g.*, claim 9, similar to claims 10-14) "a reference potential supply unit which supplies a reference potential equal to a central potential of the supply signal to the first detection electrode of said detection element, wherein said detection element includes a first detection electrode which electrically contacts the object and is connected to a predetermined common potential, and a second detection electrode which electrically contacts the object, said response signal generating unit applies the supply signal to the second detection electrode of said detection element, and outputs, as a response signal, a signal whose phase has changed in accordance with the impedance of the object with which the apparatus is in contact through said detection element, said waveform information detection unit detects, as waveform information of the response signal, a phase difference obtained by comparing a phase of a reference signal synchronized with the supply signal

with a phase of the response signal, and said biometric recognition unit determines on the basis of the waveform information of the detection signal whether or not the object is a living body". The prior art of record also does not go into the further specifics of the waveform shaping circuit to include "an amplitude limiting circuit which. . .limit[s] an amplitude, a low-pass filter. . .and an amplification circuit", nor the specifics of claim 25.

Conclusion

[13] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 3639905 A; US 4394773 A; US 5541580 A; US 5594806 A; US 5745046 A; US 5963679 A; US 6011860 A; US 6144757 A; US 6175641 B1; US 6181808 B1; US 6314195 B1; US 20010053535 A1; US 6501284 B1; US 20030036054 A1; US 20030044051 A1; US 20030072475 A1; US 20030157587 A1; US 6647133 B1; US 6898299 B1; US 6914517 B2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Rashid whose telephone number is (571) 270-1578. The examiner can normally be reached Monday - Friday 8:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

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